09/980,659
Sakamoto et al

Proposed Amendment for Interview on February 10, 2005

Amendments to the Claims

Please amend the claims as follows:

1. (Rewritten) An impulse heat sealer comprising:

a. a power source;

b a heater circuit connected to the power source;

c. a press mechanism connected to the appropriate machine supporting mechanisms adapted to effect the actual sealing and material supporting functions; and

d. a heating wire; the heating wire being of unitary construction, self-supporting and adapted to receive current from the power source through electrode portions, and via a series of zigzags and gaps, arranged in a single planar relationship in such a way that substantially all the generated heat is dissipated in that plane alone to effect a continuous heat seal on the material being sealed

2. (Rewritten) The impulse sealer of claim 1, wherein the electrode portions are defined by shoulders that are non-symmetrical with respect to the longitudinal axis of the heating wire.

3. (Rewritten) The impulse sealer of claim 1, wherein the zigzags of the heating wire extend a significant portion of the length of the heater wire.

4. (Rewritten) The impulse sealer of claim 1, wherein the zigzags of the heating wire are spaced in a proximity with respect to each other such that when a seal is effected a unitary seal is obtained with no gaps therein.

5. (Rewritten) The impulse sealer of claim 1, wherein the function is that of a laminator

Please add newly submitted Claims 6-24, as follows:

6. (Rewritten) The impulse sealer of claim 1, wherein the function is that of a book-binder.

7. A heater wire for use in an impulse sealer comprising:

a. a heat generating portion; and

b. electrode portions, the electrode portions located at the proximal and distal ends of the heat generating portion, wherein the heat generating portion is self-supporting and shaped into a desired uniform configuration for the impulse seal and arranged in a single planar relationship in such a way that substantially all the generated heat is dissipated in that plane alone, and wherein the

electrode portions are broadened to prevent heat generation therefrom such that the broadened portions forming the electrode portions are non-uniform in surface area as compared to each other with respect to the longitudinal axis of the electrode portion.

8. The heater wire of claim 7, wherein the heat generating portions of the heater wire are arranged proximal to a series of small gaps with respect to the heat generating portions thereof

9. The heater wire of claim 7, wherein the heater wire is configured in a zigzag shape with gaps formed between each of the zigzag regions that disappear in the final heat seal effected by the heater wire.

10. The heater wire of claim 9, wherein the gaps are small in size and disappear in the heat seal product formed by the heater wire when the heater wire is used by an impulse sealer.

11. The heater wire of claim 7, wherein the heater wire is formed of a thin plate of electrically high resistance material

12. The heater wire of claim 11, wherein the heater wire is formed from a thin plate of electrically high resistance material by a rolling process.

13. The heater wire of claim 11, wherein the electrically high resistance material is patterned by a photoetching process.

14. The heater wire of claim 7, wherein the heat generating portion is formed from a thin plate of electrically high resistance metal including ~~iron~~ chromium and equivalents thereof.

15. The heater wire of claim 7, wherein the heater wire is part of a laminating machine.

16. The heater wire of claim 1, wherein the heater wire is part of a book-binding machine.

17. A heater wire for use in an impulse sealer comprising:

a. a heat generating portion, said heat generating portion being formed of a heater wire configured such that the wire forms a plurality of small gaps arranged along a pre-determined portion of the extent of the heat generating portion. the gaps arranged in a single planar relationship in such a way that substantially all the generated heat is dissipated in that plane alone, and such that the gaps disappear in the final seal effected by heat diffusion when the wire is used by an impulse heat sealer; and

b. electrode portions, located at the proximal and distal portions of the heat generating portion and adapted to be connected to an appropriate power source.

18. The heater wire of claim 17, wherein the gaps formed by the wire define a series of zigzags extending along a significant portion of the heat generating portion.

19. The heater wire of claim 17, wherein the heater wire is formed of a thin plate of electrically high resistance material.

20. The heater wire of claim 19, wherein the electrically high resistance material has been strengthened by a tempering process

21. The heater wire of claim 19, wherein the electrically high resistance material is patterned by a photoetching process.

22. The heater wire of claim 17, wherein the heat generating portion is formed from a thin plate of electrically high resistance material such as iron chromium and equivalents thereof.

23. The heater wire of claim 17, wherein the heater wire is part of a laminating machine.

24. The heater wire of claim 17, wherein the heater wire is part of a book-binding machine.

In reviewing the Office Action and the cited references, it appears that the undulated wires of the refs are used for furnaces and thus the heat generated radiates outwardly. In addition there is no obviousness to use such a wire since the heat generated would be too great to give a desired seal Here the series of zig-zags are constructed to give the efficient heat production of that type of element but controlled by the actual arrangement of the zig-zags so that the heat is dissipated in the plane of the element and not significantly in the others above and below. An ordinary skilled artisan would not be led to substitute an element of this type into the impulse structure since the overheating of such an element would lead to seal failure or distortion due to material overheating. By limiting the amount of heat dissipated in the planes above and below the seal by providing

means (zig-zags) which direct the heat along the plane of the seal, the material destruction normally caused by a high heat element is obviated.